WHAT IS CLAIMED IS:

1. A thread machining control method for a thread machining apparatus which is provided with a spindle rotating and controlling means for rotating a spindle in accordance with a spindle rotational number command, a detecting means for detecting a position of the spindle, and a feed axis driving and controlling means adapted to determine a movement quantity of a feed axis on the basis of an actual rotational movement quantity of the spindle obtained by the spindle position detecting means and a screw pitch command, and to drive and control the feed axis, and which carries out a thread machining process by the rotation of the spindle and the movement of the feed axis, characterized in that:

a relative phase error of the spindle position and feed axis position occurring during the thread machining operation is determined in the spindle position, the movement quantity of the feed axis being determined on the basis of a pseudo spindle position in which a relative phase error quantity is compensated with respect to the spindle position.

2. A thread machining control method according to Claim 1, wherein the spindle position in which the relative phase error is determined indicates a rotation angle.

3. A thread machining control method according to Claim 1,

wherein the feed axis is a Z-axis, which is positioned and controlled on the basis of a movement quantity of the feed axis obtained by multiplying a variation quantity of the spindle position by a screw pitch.

4. A thread machining control method according to Claim 3, wherein the relative phase error quantity is determined in accordance with the following equation.

$$\varepsilon s' = 360 \times Sv_n \times Tz/2$$

wherein "360" represents a movement angle corresponding to one turn of the spindle; "Sv_n" an actual spindle rotational number obtained by varying the spindle rotational number command by using a spindle overriding switch; and "Tz" a Z-axis acceleration/deceleration constant.

5. A thread machining apparatus which is provided with a spindle rotating and controlling means for rotating a spindle in accordance with a spindle rotational number command (S), a detecting means for detecting a position (APA-S) of the spindle, and a feed axis driving control means for determining an actual rotational movement quantity (ΔS) of the spindle obtained by the spindle position detecting means, and a movement quantity of the feed axis on the basis of the screw pitch command (P), and which is adapted to carry out a thread

machining process in accordance with a rotation of the spindle and a movement of the feed axis, characterized in that:

the apparatus includes a means for determining an actual rotational number (Sv_n) of the spindle on the basis of a rotational movement quantity (ΔS) of the spindle, a means for determining a movement speed command (Zv) of the feed axis on the basis of the actual rotational number (Sv_n) and screw pitch command (P), a means for determining an acceleration/deceleration following error (εz), which occurs correlatively to the feed axis movement speed, on the basis of a movement speed command (Zv) and a time constant (Tz) for accelerating/decelerating the feed axis, a phase error compensating value calculating means for determining a relative phase error (εs), which is converted into a spindle position, on the basis of the acceleration/deceleration following error (εz), and a subtraction means for determining a pseudo spindle position (APA-S') by subtracting the relative phase error (εs) from the spindle position (APA-S); and determines a movement quantity of the feed axis on the basis of the pseudo spindle position (APA-S') and screw pitch command (P).

6. A thread machining apparatus according to Claim 5, wherein the spindle rotational number (S) is varied by altering a spindle speed overriding switch.

7. A thread machining apparatus according to Claim 5, wherein the apparatus is provided with a spindle speed command varying means for subjecting the spindle rotational number command (S) to speed fluctuation in a predetermined cycle.

8. A thread machining apparatus according to Claim 5, wherein the acceleration/deceleration following error determining means is adapted to execute the following equation:

$$\varepsilon z = Sv \times P \times Tz/2$$

wherein "Sv" represents an actual rotational number of the spindle; "P" a screw pitch; and "Tz" a Z-axis acceleration/deceleration constant.

9. A thread machining apparatus according to Claim 5, wherein the phase error compensating value calculating means is adapted to execute the following equation:

$$\varepsilon s = 360 \times Sv \times Tz/2$$

wherein "360" represents a movement angle (unit: degree) corresponding to one turn of the spindle.